

171899-EH

Patent Claims

1. Cartridge for refilling methanol or methanol/water as fuel to an electronic unit with a fuel cell, which cartridge is a leakage proof, tamper proof and child proof container for said fuel,

characterized in that the cartridge includes a connection device comprising:

an axially slidable cylinder with an upper end that with a first sealing means is brought sealingly through an inner cartridge wall that constitutes the container for the fuel,

passage way for fuel arranged along the cylinder, with opening for fuel in at least two different distances from the upper end of the cylinder, of which both openings are located outside the inner cartridge wall with the cylinder in an outer position,

a second sealing means arranged at a lower end of the cylinder, sealing against an opening through an outer cartridge wall,

a spring arranged around the cylinder such that the first sealing means is pressed sealingly against the inner cartridge wall and the second sealing means is pressed sealingly against the outer cartridge wall, such that the passage way for fuel is kept closed, but the spring can be compressed at the same time as the cylinder is displaced axially to an inner position, such that the passage way for fuel is opened from the container for fuel to outside the connection device,

optionally a pipe or a flow way arranged vertically below the opening through the outer cartridge wall, and

optionally a push bar, arranged from the lower end of the cylinder, through or below the opening in the outer cartridge wall and a distance into the optional pipe.

2. Cartridge according to claim 1,

characterized in that the connection device is comprising:

a hollow cylinder with an upper end that sealingly is brought through an inner cartridge wall, which cylinder is axially slidable in through the inner cartridge wall that constitutes the container for the fuel,

a plate arranged extending outwards on the upper end of the cylinder, sealing against the inside of the inner cartridge wall,

holes arranged through the cylinder wall in at least two different distances from the upper end of the cylinder,

an oppositely oriented cone with the base arranged on a lower end of the cylinder, sealing outwards towards an oppositely oriented cone form that constitutes a part of an outer cartridge wall,

a spring arranged around the cylinder such that the plate is sealingly pressed against the inner cartridge wall and the cone is sealingly pressed against the cone form, optionally a pipe arranged vertically below the apex of the cone form, below an opening arranged through the apex of the cone form, and an optional push bar arranged from the apex of the cone, through the opening in the apex of the cone form and a distance into the optional pipe.

3. Cartridge according to claim 1 or 2, characterized in that sealing material in form of fuel resistant elastomeric material is arranged on the sealing means, such as on the plate for sealing against the inner cartridge wall and on the cone for sealing against the cone form.
4. Cartridge according to claim 2 or 3, characterized in that a push bar is arranged from the lower end of the cylinder, through the opening in the outer cartridge wall and a distance into a pipe arranged below, in that the length of the push bar is adapted such that by mating of the connection will a correspondingly constructed push bar on the connection device of the connected unit together with the first mentioned push bar provide a sufficient displacement in the connection devices to that fuel can be transferred from the cartridge to a fuel container connected to the connection device of the other unit.
5. Electronic unit with a fuel cell utilizing methanol or methanol/water as fuel for production of electric power for operation of the electronic unit, characterized in that the unit includes a connection device or a fuel container with a connection device comprising:
 - an axially slidable cylinder with an upper end that with a first sealing means is brought sealingly through an inner wall that constitutes the container for the fuel,
 - passage way for fuel arranged along the cylinder, with opening for fuel in at least two different distances from the upper end of the cylinder, of which both openings are located outside the inner wall with the cylinder in an outer position,
 - a second sealing means arranged at a lower end of the cylinder, sealing against an opening through an outer wall,
 - a spring arranged around the cylinder such that the first sealing means is pressed sealingly against the inner wall and the second sealing means is pressed sealingly against the outer wall, such that the passage way for fuel is kept closed, but the spring can be compressed at the same time as the cylinder is displaced axially to an inner position, such that the passage way for fuel is open from the container for fuel to outside the connection device,

optionally a pipe or a flow way arranged vertically below the opening through the outer wall, and

optionally a push bar, arranged from the lower end of the cylinder, through or below the opening in the outer wall and a distance into the optional pipe.

6. Unit according to claim 5, characterized in that the connection device is comprising:

a hollow cylinder with an upper end that sealingly is brought through an inner wall, which cylinder is axially slidable in through the inner wall that constitutes the container for the fuel,

a plate arranged extending outwards on the upper end of the cylinder, sealing against the inside of the inner wall,

holes arranged through the cylinder wall in at least two different distances from the upper end of the cylinder,

an oppositely oriented cone with the base arranged on a lower end of the cylinder, sealing outwards towards an oppositely oriented cone form that constitutes a part of an outer wall,

a spring arranged around the cylinder such that the plate is sealingly pressed against the inner wall and the cone is sealingly pressed against the cone form,

optionally a pipe arranged vertically below the apex of the cone form, below an opening arranged through the apex of the cone form, and

an optional push bar arranged from the apex of the cone, through the opening in the apex of the cone form and a distance into the optional pipe.

7. Unit according to claim 5 or 6, characterized in that sealing material in form of fuel resistant elastomeric material is arranged on the sealing means, such as on the plate for sealing against the inner wall and on the cone for sealing against the cone form.

8. Unit according to claim 6 or 7, characterized in that a push bar is arranged from the lower end of the cylinder, through the opening in the outer wall and a distance into a pipe arranged below, in that the length of the push bar is adapted such that by mating of the connection will a correspondingly constructed push bar on the connection device of the connected unit together with the first mentioned push bar provide a sufficient displacement in the connection devices to that fuel can be transferred.

9. Unit according to anyone of claims 5-8,

characterized in that the electronic unit is chosen amongst a mobile telephone, a computer, a calculation unit, a camera, a recording unit and any other unit operated by electric power.

10. Fuel container for an electronic unit,

characterized in that it is including a connection device comprising:

an axially slidable cylinder with an upper end that with a first sealing means is brought sealingly through an inner wall that constitutes the container for the fuel,

passage way for fuel arranged along the cylinder, with opening for fuel in at least two different distances from the upper end of the cylinder, of which both openings are located outside the inner wall with the cylinder in an outer position,

a second sealing means arranged at a lower end of the cylinder, sealing against an opening through an outer wall,

a spring arranged around the cylinder such that the first sealing means is pressed sealingly against the inner wall and the second sealing means is pressed sealing against the outer wall, such that the passage way for fuel is kept closed, but the spring can be compressed at the same time as the cylinder is displaced axially to an inner position, such that the passage way for fuel is opened from the container for fuel to outside the connection device,

optionally a pipe or a flow way arranged vertically below the opening through the outer wall, and

optionally a push bar, arranged from the lower end of the cylinder, through or below the opening in the outer wall and a distance into the optional pipe.

11. Container according to claim 10,

characterized in that the connection device is comprising:

a hollow cylinder with an upper end that sealingly is brought through an inner wall, which cylinder is axially slidable in through the inner wall that constitutes the container for the fuel,

a plate arranged extending outwards on the upper end of the cylinder, sealing against the inside of the inner wall,

holes arranged through the cylinder wall in at least two different distances from the upper end of the cylinder,

an oppositely oriented cone with the base arranged on a lower end of the cylinder, sealing outwards towards an oppositely oriented cone form that constitutes a part of an outer wall,

a spring arranged around the cylinder such that the plate is sealingly pressed against the inner wall and the cone is sealingly pressed against the cone form,

optionally a pipe arranged vertically below the apex of the cone form, below an opening arranged through the apex of the cone form, and

an optional push bar arranged from the apex of the cone, through the opening in the apex of the cone form and a distance into the optional pipe.

12. Container according to claim 10 or 11, characterized in that sealing material in form of fuel resistant elastomeric material is arranged on the sealing means, such as on the plate for sealing against the inner wall and on the cone for sealing against the cone form.

13. Container according to claim 11 or 12, characterized in that a push bar is arranged from the lower end of the cylinder, through the opening in the outer wall and a distance into a pipe arranged below, in that the length of the push bar is adapted such that by mating of the connection will a correspondingly constructed push bar on the connection device of the connected unit together with the first mentioned push bar provide a sufficient displacement in the connection devices to that fuel can be transferred from the cartridge to a fuel container connected the connection device of the other unit.